

*Environmental Research,
Epistemic Community and
International Relations in Asia*

環境研究と21世紀アジアの未来

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1) Changing context of climate change negotiations 温暖化交渉の変質

2) Earth science meets environmental diplomacy 自然科学と外交の融合

3) Great variety of country systems and regimes in Asia

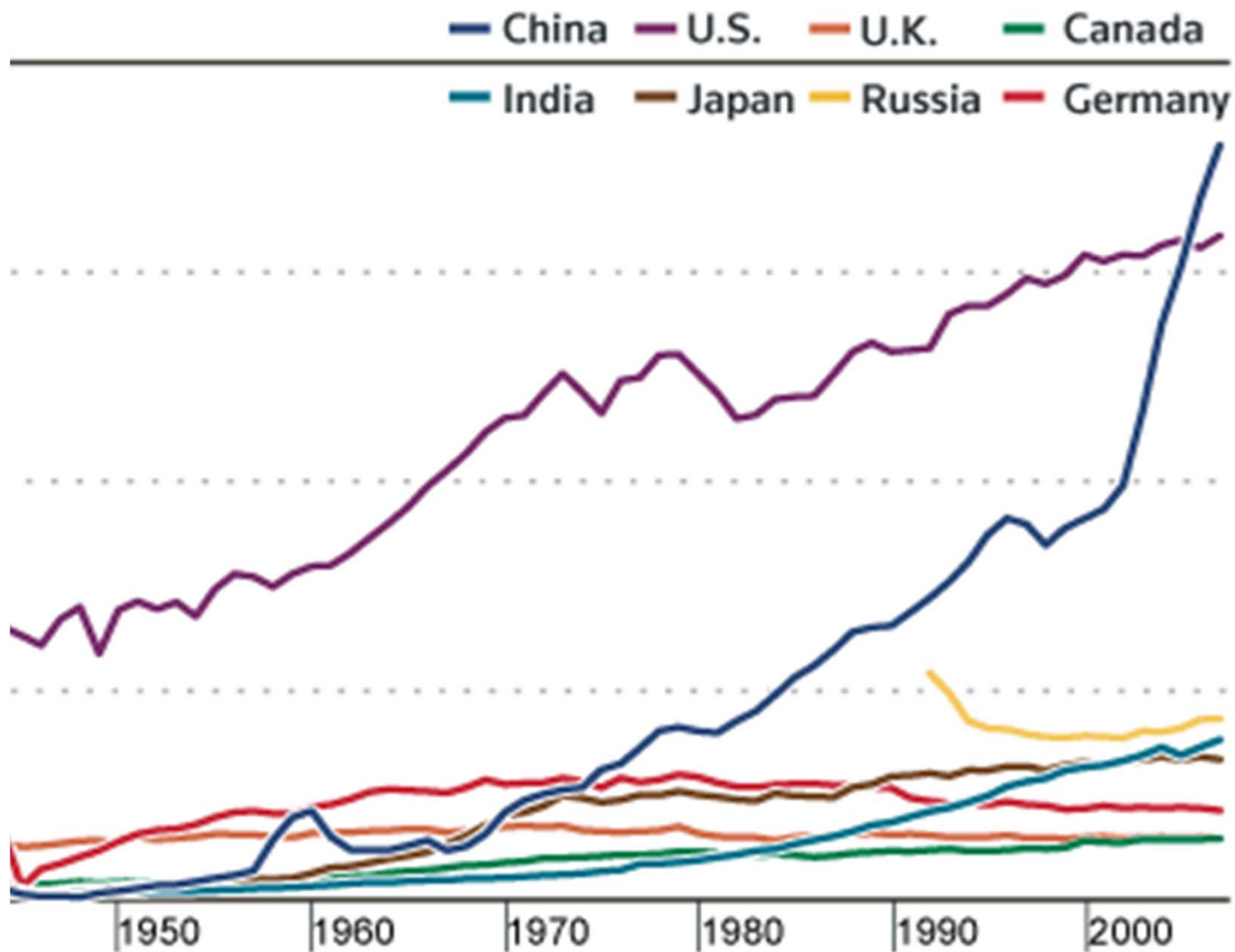
アジアにおける国のタイプの多様性

4) Environmental research and international relations

環境研究と地域の安定

世界のCO₂排出量 (米エネルギー省CO₂情報分析センター)

World carbon emissions



Merger of earth science & int'l politics

地球科学研究と国際政治の融合

	Acid Rain	Ozon Layer	Climate Change
Initial warning 初期警告	Later 1960s	1974	1970s
Official scientific assessment 科学のアセスメント組織	EMEP 1978～	CCOL 1977～	IPCC 1988～
Negotiation arena 条約交渉の場	UN-ECE 1978～	United Nations Environment Programme 1981～	Intergovernmental Negotiating Committee (INC) 1990～
Framework convention Signed Entry into force	LRTAP 1979 1983	Vienna Convention 1985 1988	UNFCCC 1992 1994
Protocol Signed Entry into force	SOx NOx 1985 1988 1987 1991	Montreal 1987 1989	Kyoto 1998 2005
Protocol Amendment Signed Entry into force	Oslo 1994 1998		

Acid rain and int'l politics

1972 UNCHE (Stockholm)

1979 CLRTAP signed

1983 Pershing missile deployment

1984 EMEP Protocol (entry into force: 1988)

1985 Helsinki Protocol (entry into force: 1987)

1989 Berlin-Wall collapsed

1992 UNCED (Rio de Janeiro)

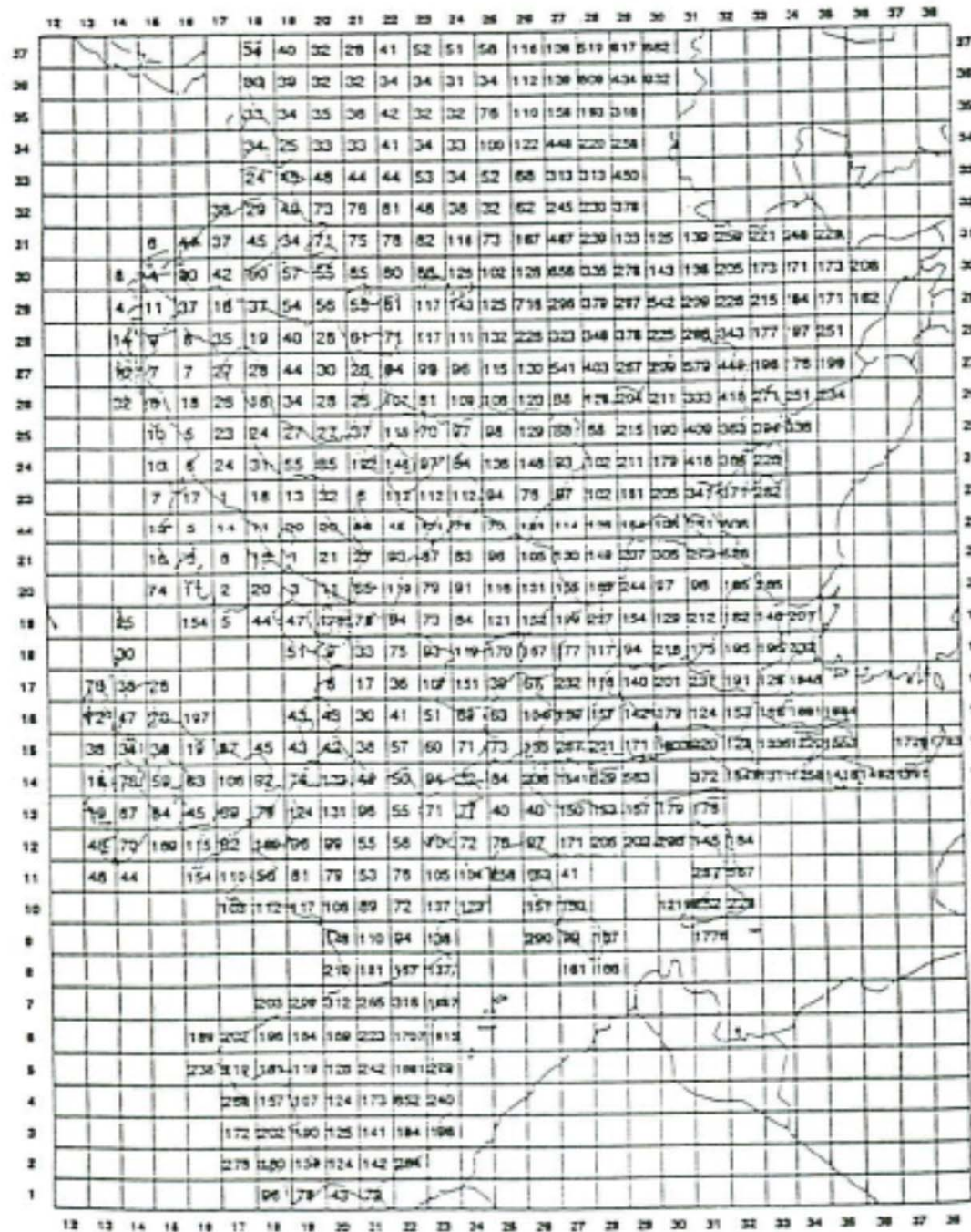
1994 Oslo Protocol (entry into force: 1998)

1999 Gothenburg Protocol (entry into force: 2005)

Major Protocols under LRTAP

LRTAP条約下での主な議定書

	Protocol 議定書	Major commitments 内容
1984	EMEP Protocol	Co-financing for monitoring
1985	Helsinki Protocol	Reduce national or transboundary sulphur emission by 30% of 1980 level until 1993 SO _x の30%削減
1994	Oslo Protocol(オスロ議定書)	Reduce of 60% sulphur emission of critical loads
1999	Gothenburg Protocol (ヨテボリ議定書) (Multi-effect, multi-pollutant Protocol)	Comprehensive assessment and reduction



オスロ議定書付属書I
(限界負荷量地図)

Critical load map (Oslo Protocol, Annex I)

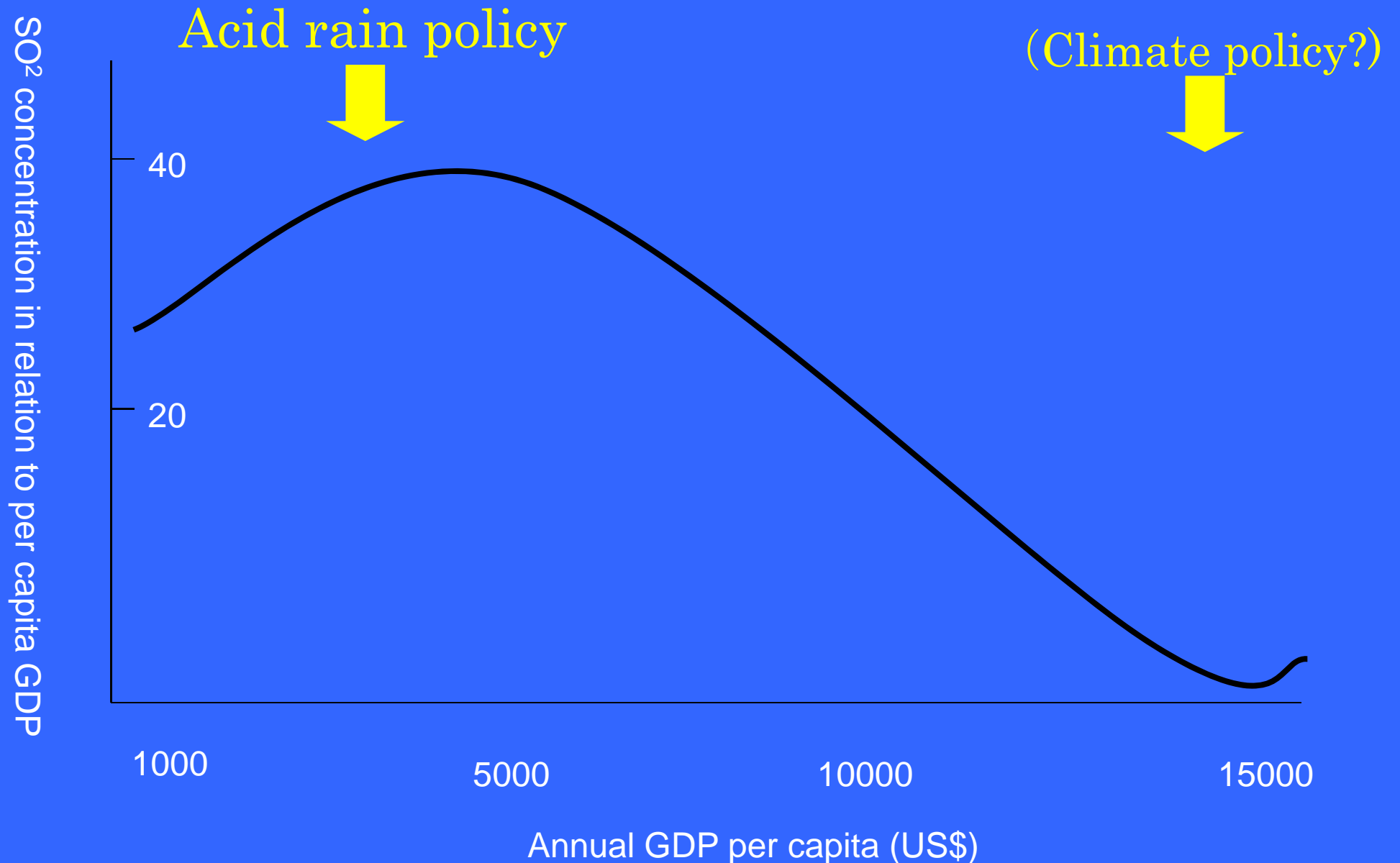
SO₂ emission ceilings by Oslo Protocol

(オスロ議定書によるSO₂排出のシーリング)

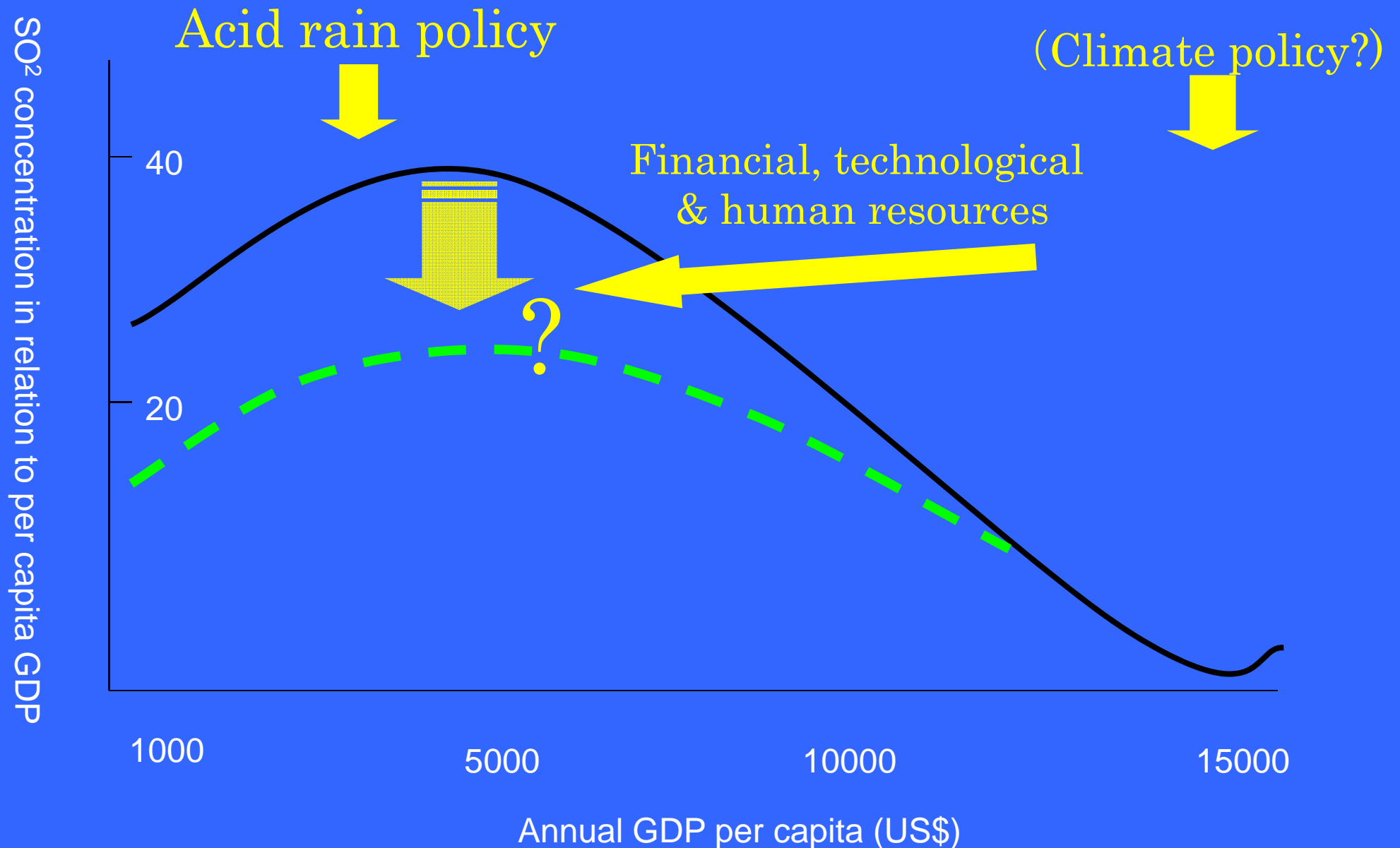
	SO ₂ Emission (kt)		SO ₂ ceilings(%: base year 1980)		
	1980	1990	2000	2005	2010
Denmark	451	180	80		
France	3348	1202	74	77	78
Germany	7494	5803	83	87	
Italy	3800		65	73	
Netherlands	446	207	77		
Norway	142	54	76		
Sweden	507	130	35		
Switzerland	126	62	52		
Russian Fed.	7161	4460	38	40	40
UK	4898	3780	50	70	80

Environmental Kuzunets Curve

(環境クズネッツ曲線)



Environmental Kuzunets Curve



認識共同体とその機能 (P.Haas, 1992)

Support to int'l negotiation

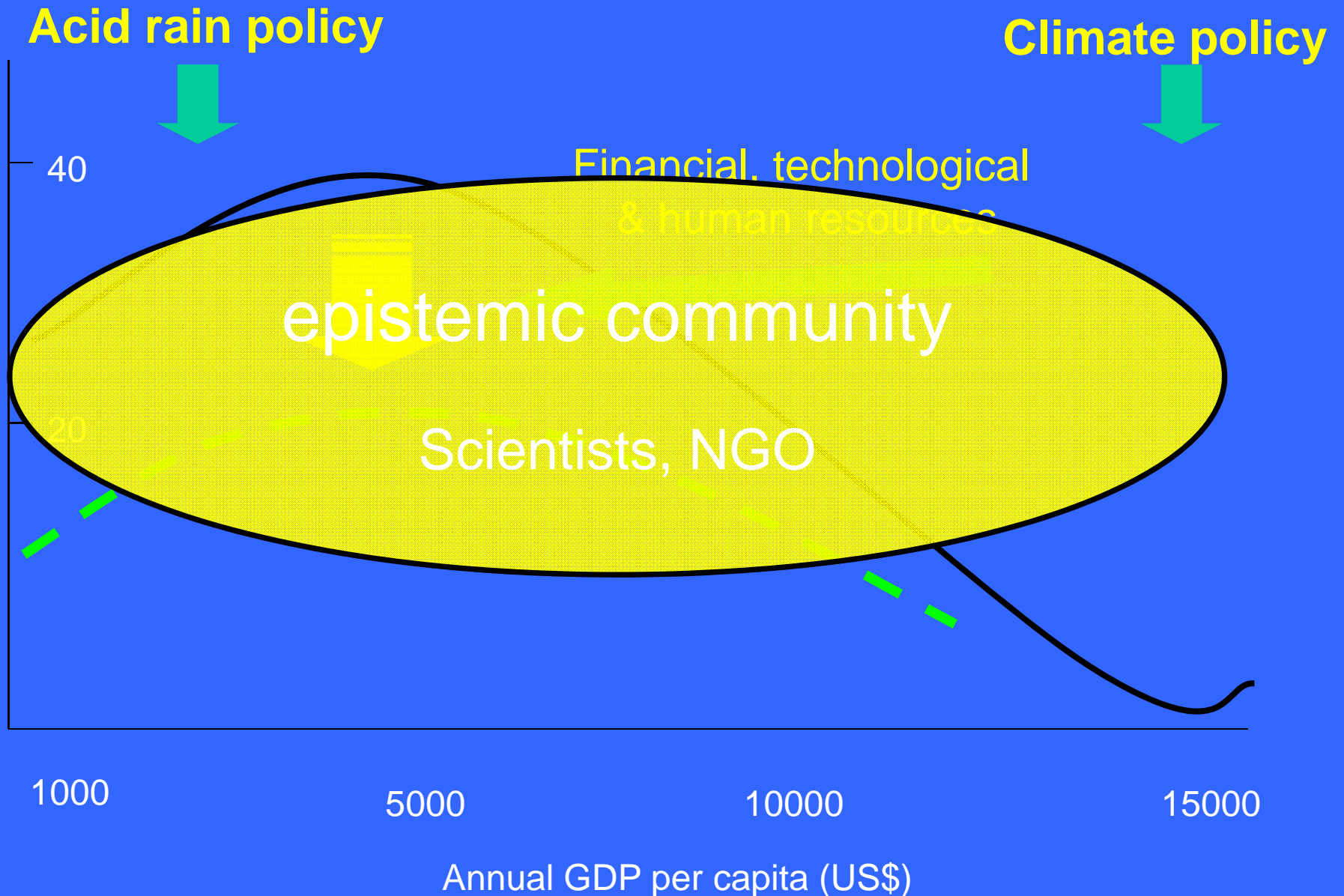
Establish and maintain regimes



Advices to domestic policy; informed consensus building

Environmental Kuzunets Curve

SO₂ concentration in relation to per capita GDP



Scientific Research Cooperation, First!

Support to int'l negotiation

Establish and maintain regimes



Advices to domestic policy; informed consensus building

Climate change and its security Implications

(UN,2009:気候変動とその安全保障上の含意)

